

Amendment to the Claims:

1. (Currently Amended) A piston ~~Piston~~ vacuum pump, comprising

a cylinder ~~[(14)]~~ and a piston ~~[(12)]~~ forming a compression chamber ~~[(28)]~~ with the cylinder ~~[(14)]~~ and oscillating in the cylinder ~~[(14)]~~ with a compression stroke and an intake stroke,

a gas inlet ~~[(30)]~~ in a side wall ~~[(16)]~~ of the cylinder ~~[(14)]~~, the gas inlet ~~[(30)]~~ being closed by the piston ~~[(12)]~~ at the beginning of the intake stroke and open at the end of the intake stroke, and

an equalizing conduit with a valve, gas flowing from the gas inlet ~~[(30)]~~ through the equalizing conduit and the valve into the compression chamber ~~[(28)]~~ during the beginning of the intake stroke,

~~characterized in~~

~~that the piston [(12)] forms~~ forming the equalizing conduit and the valve.

2. (Currently Amended) The piston ~~Piston~~ vacuum pump according to claim 1, ~~characterized in that~~ wherein the equalizing conduit ~~in the piston [(12)]~~ is formed in the piston between a piston side wall opening ~~[(32)]~~ and a piston end wall opening ~~[(36)]~~, the piston end wall opening ~~[(36)]~~ and the gas inlet ~~[(30)]~~ being connected with each other at the beginning of the intake stroke.

3. (Currently Amended) The piston ~~Piston~~ vacuum pump according to claim 1 ~~[[or 2]]~~, ~~characterized in that~~ wherein the valve is a non-return valve ~~[(40)]~~ blocking in the direction of the gas inlet ~~[(30)]~~ and opening in the direction of the compression chamber ~~[(28)]~~.

4. (Currently Amended) The piston ~~Piston~~ vacuum pump according to claim 3, ~~characterized in that~~ wherein the non-return valve ~~[(40)]~~ is arranged at ~~the a piston end wall [(26)]~~ which faces the compression chamber.

5. (Currently Amended) The piston ~~Piston~~ vacuum pump according to ~~one of claims~~ claim 1 ~~[[4]]~~, ~~characterized in that wherein~~ the gas inlet ~~[[30]]~~ has an annular groove ~~[[52,62]]~~ in at least one of the cylinder side wall ~~[[16]]~~ and ~~[[or]]~~ in the piston side wall ~~[[24]]~~ ~~allocated thereto~~.

6. (Currently Amended) The piston ~~Piston~~ vacuum pump according to ~~one of claims~~ claim 1 ~~[[5]]~~, ~~characterized in that further including:~~

a storage chamber ~~[[34]]~~ ~~is provided~~ defined in the piston ~~[[12]]~~ in the ~~course of the~~ equalizing conduit.

7. (Currently Amended) The piston ~~Piston~~ vacuum pump according to claim 1, ~~characterized in that wherein~~ the equalizing conduit and the valve ~~[[72]]~~ are formed by a gap ~~[[72]]~~ between the a piston side wall ~~[[73]]~~ and the a cylinder side wall ~~[[75]]~~, the gap width ~~ranging being~~ between 10 and 100 μm .

8. (Currently Amended) The piston ~~Piston~~ vacuum pump according to claim 1, ~~characterized in that wherein~~ the equalizing conduit and the valve are formed by a substantially axial groove ~~[[82]]~~ in the a piston side wall ~~[[84]]~~ or in the a cylinder side wall.

9. (Currently Amended) The piston ~~Piston~~ vacuum pump according to ~~one of claims~~ claim 1 ~~[[8]]~~, ~~characterized in that wherein~~ the valve is configured as a throttle.

10. (New) A piston vacuum pump comprising:
a cylinder defined by a peripheral cylinder wall;
a gas inlet aperture defined in the cylinder side wall;
a piston mounted for reciprocating movement within the cylinder, the piston including a peripheral side wall and walls that define a storage chamber in the piston, the piston side wall having an aperture that communicates with the gas inlet at least at a beginning of an intake stroke, one of the piston end walls having an aperture

in communication between the storage chamber and a compression chamber defined by the piston and the cylinder; and

a one-way valve mounted at the piston end wall aperture to permit gas flow from the storage chamber to the compression chamber and block the gas flow between the compression chamber to the storage chamber.

11. (New) A piston vacuum pump comprising:

a cylinder defined by a cylinder side wall;

a gas inlet defined in the cylinder side wall;

a piston mounted for reciprocating movement in the cylinder, the piston having a side wall facing the cylinder side wall, the piston and cylinder defining a compression chamber;

a gap between 10 and 100 μm defined from the gas inlet to the compression chamber between the piston side wall and the cylinder side wall such that gas flows from the gas inlet to the compression chamber during at least a portion of an intake stroke and is throttled from flowing from the compression chamber to the gas inlet during a compression stroke.